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specimens from the North Carolina locality or that the editors knew it from that locality as well as from the other from which they distributed it. Professor Farlow informs me that the Sullivant Herbarium does in fact contain a specimen labelled "*Weissia fugax*, in montibus Carolinae Septentrionalis, leg. A. Gray & J. Carey, July 1841." This specimen I have not seen, but I would agree entirely with Mr. Williams that all specimens from our eastern states which I have seen belong with *R. crispata* rather than *R. fugax*.

ITHACA, N. Y.

THE BRYOPHYTES OF NOVA SCOTIA, WITH SPECIAL REFERENCE TO CAPE BRETON¹

GEORGE E. NICHOLS

Cape Breton, projecting so far out into the Atlantic that the distance to the west coast of Ireland is less by a thousand miles than from New York, has sometimes been referred to as "the long wharf of Canada." Politically it is a part of the province of Nova Scotia, but geographically it is separated from the mainland by the Gut of Canso, a narrow strait about a mile in breadth. Although it has been visited by several botanists in recent years, very few additions appear to have been made to the list of bryophytes recorded from this region in Macoun's catalogue.² During a short trip to Cape Breton in 1909 the writer collected a number of liverworts and mosses not before recorded from there, and this number has been considerably augmented on two subsequent trips, in 1914 and 1915, when about four months were spent in botanical investigations. The primary object of the present paper is to present a list of the various species collected in Cape Breton by the writer. Incidentally it has seemed worth while to summarize briefly all previous records, so far as known to the writer, concerning Cape Breton bryophytes, and to include some account of the bryophytes of other parts of Nova Scotia. For the sake of convenience the term Nova Scotia will be used to embrace only parts of the province outside of Cape Breton. In order to economize space the following system of symbols has been adopted. An asterisk (*) placed after a species indicates, "collected in Cape Breton by the writer also"; a dagger (†), "recorded from Nova Scotia in Macoun's catalogue"; a double dagger (‡), "represented from Nova Scotia by a specimen either in the herbarium of Yale University or in the herbarium of New York Botanical Garden, but not recorded by Macoun"; a question mark [?], "some doubt as to identity of specimens on which record was based."

For assistance in the determination of various species, indebtedness is acknowledged to the following bryologists: Mrs. Elizabeth G. Britton, Professor Alexander W. Evans, Mr. Robert S. Williams, Professor A. LeRoy Andrews, Dr. Abel J. Grout, Dr. George N. Best, Dr. Carl Warnstorf, Dr. Ingebrigt S. Hagen and Dr. Leopold Loeske.

¹ Contribution from the Osborn Botanical Laboratory.

² Catalogue of Canadian Plants: Part 6, Montreal, 1892; Part 7, Ottawa, 1902.

I. SPECIES RECORDED FROM CAPE BRETON BY MACOUN

Below is a list of the bryophytes recorded from Cape Breton in Macoun's catalogue. LIVERWORTS: *Conocepalum conicum**†, *Preissia quadrata**† (as *Cyathophora*), *Marchantia polymorpha**†, *Riccardia latifrons**†, (as *Aneura*), *Pellia epiphylla**†, *Blasia pusilla**†, *Marsupella emarginata**†, *M. Sullivantii**† (as *M. sphacelata*), *Nardia crenulata**†, *Jungermannia cordifolia**, *J. lanceolata*, *Jamesoniella autumnalis**†, (as *Jungermannia*), *Lophozia attenuata**†, *L. barbata**†, *L. incisa**†, *L. inflata**†, *L. longidens**, *L. quinquedentata**, *L. ventricosa**, *Sphenolobus minutus** (as *Lophozia*), *Plagiochila asplenoides**†, *Mylia Taylori**†, *Lophocolea heterophylla**†, *Chiloscyphus rivularis**† (as *C. polyanthos*), *Harpanthus scutatus**†, *Geocalyx graveolens**†, *Cephalozia bicuspidata**†, *C. catenulata**†, *C. curvifolia**†, *C. media**†, *Odontoschisma denudatum*†, *O. Sphagni*, *Calypogeia Trichomanis**† (as *Kantia*), *Bazzania tricrenata**† (as *B. triangularis*), *B. trilobata**†, *Lepidozia reptans**†, *Blepharostoma trichophyllum**†, *Ptilidium ciliare**†, *Diplophyllum albicans**† (as *Diplophyllia*), *D. taxifolium**† (as *Diplophyllia*), *Scapania nemorosa**† (also as *S. gracilis*), *S. undulata**†, *Radula complanata**†, *Porella platyphylla**†, *Lejeunea patens**, *Frullania Asagrayana**†, *F. eboracensis**†, *F. Oakesiana**, *F. Tamarisci**†. MOSSES: *Sphnagnum imbricatum**, *S. Pylaeisii**, *Andreaea petrophila**†, *Trematodon ambiguus**†, *Swartzia montana** (as *Distichium capillaceum*), *Trichodon tenuifolius* [?] (as *T. cylindricus*), *Ceratodon purpureus**†, *Ditrichum flexicaule*, *D. heteromallum* (as *D. homomallum*), *D. lineare** (as *D. vaginans*), *Blindia acuta**, *Dicranella heteromalla**†, *D. pusilla** (as *D. cerviculata*), *D. squarrosa**, *Oncophorus Wahlenbergii**†, *Dicranum Bergeri**†, *D. flagellare**, *D. fulvum*† (also listed as *D. viride**), *D. fuscescens**† (listed also as *D. congestum*, *D. crispulum*, and *D. sulcatum*), *D. longifolium**, *D. majus**, *D. rugosum**† (as *D. undulatum*), *D. scoparium**† (also listed as *D. canadense*), *D. spurium**† († also as *D. brachycaulon*), *Dicranodontium denudatum* [?] (as *D. longirostre*), *Dichodontium pellucidum**, *Leucobryum glaucum**† (as *L. vulgare*), *Fissidens adiantoides**†, *F. cristatus* (as *F. decipiens*), *F. osmundioides**†, *Gymnostomum calcareum*†, *Gyroweisia pusilla* [?] (as *Gymnostomum*), *Leptodontium excelsus* (as *Amphoridium Sullivantii*), *Tortella tortuosa** (as *Barbula*), *Didymodon rubellus**†, *Barbula unguiculata*†, *Encalypta contorta* (as *E. streptocarpa*), *Grimmia apocarpa**†, *G. gracilis*, *Racomitrium aciculare**†, *R. canescens**, *R. fasciculare**, *R. hypnoides**† (also as *R. lanuginosum*), *R. microcarpum*†, *Anoetangium lapponicum**† (as *Amphoridium*), *A. Mougeotii* (as *Amphoridium*), *Orthotrichum affine**, *O. fastigiatum*, *O. obtusifolium*†, *O. rupestre*, *Ulota Drummondii*, *U. intermedia*, *U. Ludwigii**†, *U. maritima*, *U. phyllantha*†, *U. ulophylla**† (as *U. crispata*), *Tayloria tenuis*†, *Tetraplodon australis*, *Splachnum ampullaceum*†, *Funaria hygrometrica**†, *Leptobryum pyriforme**†, *Pohlia cruda**† (as *Webera*), *Bryum acutiusculum*, *B. pallens*, *B. pallescens**, *B. ventricosum** (as *B. pseudotriquetrum*), *Mnium affine*†, *M. ciliare**, *M. Drummondii*†, *M. hornum**†, *M. hymenophylloides*†, *M. punctatum**†, *M. stellare*, *Aulacomnium palustre**†, *Plagiopus Oederi**† (as *Bartramia*), *Bartramia crispata*, *Philonotis fontana**†, *Hedwigia albicans**† (as *H. ciliata*), *Fontinalis dalecarlica**†, *F. gigantea**†, *F. Delamarei**, *F. seriata*,

Neckera complanata†, *N. pennata**†, *Homalia Jamesii*†, *Pylaisia polyantha*, *P. polyantha pseudo-platygyrium* (as *P. pseudo-platygyrium*), *P. Schimperi*† (as *P. intricata*), *Pterygynandrum decipiens*, *Myurella gracilis**† (as *M. Careyana*). *Anomodon attenuatus**†, *A. viticulosus*, *Thuidium Philiberti*, *Amblystegium fluviatile*, *A. varium*† (as *A. porphyrhizon*), *Drepanocladus Sendtneri* (as *Hypnum*), *Hypnum (Drepanocladus) pseudolycopodioides*, *Hypnum (Drepanocladus) Moseri*, *Calliergon cordifolium**† (as *Hypnum*), *C. stramineum** (as *Hypnum*), *Acrocladium cuspidatum** (as *Hypnum*), *Hygrohypnum eugyrium**† (as *Hypnum*), *H. ochraceum**† (as *Hypnum*), *Hypnum (Chrysohypnum) sinuolatum*, *Hylocomium brevirostre**†, *H. umbratum**†, *Rhytidiadelphus loreus**† (as *Hylocomium*), *R. squarrosus**† (as *Hylocomium*), *Stereodon canariensis* (as *Hypnum Waghornei*), *S. fertilis** (as *Hypnum*), *S. imponens**† (as *Hypnum*), *Hypnum (Stereodon) molluscoides*, *Plagiothecium aciculari-pungens*†, *P. denticulatum**†, *P. striatellum**† (as *P. Muhlenbeckii*), *Sematophyllum delicatulum* (as *Raphidostegium laxepatulum* (also as *R. Roellii* and *R. Whitei*), *Brachythecium digastrum*, *B. glaciale* (as *Eurynchium*), *B. plumosum**†, *B. populeum**†, *B. reflexum**, *B. rivulare**, *B. salebrosum**†, *Oxyrrhynchium rusciforme**† (as *Eurynchium*), *Webera sessilis**† (as *Diphyscium foliosum*), *Georgia geniculata**, *G. pellucida**†, *Catharinaea Haussknechtii* [?] (as *Atrichum*), *C. Selwyni* [?] (as *Atrichum*), *Polytrichum alpinum**† (as *Pogonatum*), *Polytrichum ohioense**, *Pogonatum tenue**† (as *P. brevicaulis*), *P. urnigerum**†.

2. SPECIES SINCE RECORDED FROM CAPE BRETON

The following bryophytes have been recorded from Cape Breton since the publication of Macoun's catalogue: *Metzgeria furcata***,¹ *Nardia scalaris**,² *Cephalozia Francisci***,³ *C. leucantha***³, *Hygrobiella laxifolia***³, *Sphagnum palustre**,⁴ *Gymnostomum rupestre**,⁴ *Philonotis americana***†,⁵ *Anacamptodon splachnoides***⁶, *Stereodon curvifolius**⁴ (as *Hypnum*) and *Polytrichum commune**.⁴ Cape Breton records for double starred (**) species are based on the writer's specimens.

3. SPECIES NEW TO CAPE BRETON

The writer's explorations have been confined to the northernmost portion of Cape Breton. With the exception of Cape Dauphin (in Cape Breton County), all stations cited for specimens collected by the writer are situated in that part of Victoria County lying north of North River. This area is one of varied topography and geological diversity. The interior is mountainous and in places the mountains form massive promontories along the coast. Elsewhere the shore is bordered by a narrow strip of flatter land averaging less than a mile

¹ A. W. Evans, *Rhodora* **11**: 186. 1909.

² A. W. Evans, *Rhodora* **14**: 12. 1912.

³ A. W. Evans, *BRYOLOGIST* **18**: 83. 1915.

⁴ C. B. Robinson, *Bull. Pictou Acad. Sci. Assn.* **1**: 32. 1907.

⁵ G. Dismier, *Bull. Soc. Bot. France* **57**: 22. 1910.

⁶ G. E. Nichols, *Rhodora* **13**: 46. 1911.

in width but locally extending inland for several miles. Along the coast are occasional outcrops of dolomite, and extensive beds of gypsum occur in many localities. With these exceptions the rocks are predominantly potassic. For the most part the calcareous rocks are dry or otherwise unfavorable for the growth of bryophytes, so that comparatively few strictly calciphilous species have been found. The general vegetational features of this region are to be discussed in a forthcoming paper. Suffice it to state here that, except on the mountains where there are extensive heath-like "barrens," the country is forested with a mixture of coniferous and deciduous types. Some of the localities mentioned in the subtended list require brief definition. "Barrasois" includes the area within a radius of five miles of the mouth of Indian Brook. A large proportion of the specimens so designated came from the valley of the Barrasois River. Similarly, "Ingonish" includes the area within a radius of five miles north and west of South Bay, Ingonish; and "Aspy Bay" embraces the area within a radius of five miles of Dingwall, on Aspy Bay. "Barrasois barrens" refers to a large barren about eight miles northwest of the mouth of Indian Brook—locally known as Scotchman's Barren. "Ingonish barrens" include a series of barrens from eight to twelve miles west (approximately) of South Bay, Ingonish. "Ingonish mountains" include the mountains between these barrens and the settlement at South Bay. "Aspy Bay barrens" refer to barrens about seven miles west-southwest of Dingwall. "Aspy Bay mountains" are in the vicinity of these barrens. The numbers cited under the various species refer to specimens preserved in the herbarium of Yale University. Specimens numbered 091-09180 were collected in 1909, 1-1050 in 1914, and 1101-1750 in 1915. Liverworts collected in 1909 (and so cited) were not numbered. The list of species new to Cape Breton is as follows:

LIVERWORTS

1. *RICCARDIA MULTIFIDA* (L.) S. F. Gray.‡ Barrasois 1334b, 1446, 1449b.
2. *RICCARDIA PINGUIS* (L.) S. F. Gray. Barrasois 1203, 1204.
3. *RICCARDIA SINUATA* (Dicks.) Trevis. Barrasois 199; Ingonish barrens 789, 840, 1665.
4. *PALLAVICINIA LYELLII* (Hook.) S. F. Gray. Barrasois 1169; Ingonish mountains 706, 1657; Ingonish barrens 1637, 1660; Aspy Bay 968.
5. *PELLIA FABRONIANA* Raddi. Ingonish 722.
6. *PELLIA NEESIANA* (Gottsche) Limpr.‡ Barrasois 1205, 1245; Ingonish 704.
7. *FOSSOMBRONIA FOVEOLATA* Lindb. Aspy Bay 975.
8. *MARSUPELLA AQUATICA* (Lindenb.) Schiffn. Barrasois 1500.
9. *MARSUPELLA USTULATA* (Hüb.) Spruce. Barrasois barrens 509.
10. *NARDIA OBOVATA* (Nees) Carringt. Barrasois 1269, 1445, 1478; Ingonish mountains 1725.
11. *LOPHOZIA ALPESTRIS* (Schleich.) Evans. Barrasois 1909, 1371.
12. *LOPHOZIA BADENSIS* (Gottsche) Schiffn. Ingonish 715.
13. *LOPHOZIA BINSTADII* (Kaalaas) Evans. Barrasois 1431b.

14. LOPHOZIA KAURINI (Limpr.) Steph. Ingonish mountains 1722; Aspy Bay 961, 965.
15. LOPHOZIA PORPHYROLEUCA (Nees) Schiffn.‡ Barrasois 1909, 300, 322, 1292, 1358.
16. SPHENOLOBUS EXSECTUS (Schmid.) Steph. Barrasois 1909; collected also at Half Way Brook by Macoun (1898, in herb. A. W. Evans).
17. SPHENOLOBUS HELLERIANUS (Nees) Steph.‡ Barrasois 1909.
18. SPHENOLOBUS MICHAUXII (Web.) Steph.† (listed by Macoun under *Lophozia*). Barrasois 1909, 263, 299, 1549.
19. MYLIA ANOMALA (Hook.) S. F. Gray.‡ Barrasois 1170, 1198; Barrasois barrens 461, 463, 467, 469, 470; Ingonish barrens 1638.
20. CHILOSCYPHUS FRAGILIS (Roth) Schiffn. Barrasois 1487; Ingonish 1726.
21. CHILOSCYPHUS PALLESCENS (Ehrh.) Dumort.‡ Barrasois 1909, 507, 1395; Ingonish 721; Ingonish mountains 791; Aspy Bay mountains 1010.
22. CEPHALOZIA FLUITANS (Nees) Spruce. Barrasois 1195, 201; Barrasois barrens 460; Ingonish barrens 1684; Aspy Bay barrens 999.
23. CEPHALOZIA LOITLESBERGERI Schiffn. Barrasois 1243b. New to North America.
24. CEPHALOZIA PLENICEPS (Aust.) Lindb.‡ Ingonish barrens 1653b.
25. CEPHALOZIELLA BYSSACEA (Roth) Warnst. Barrasois 1909, 1378.
26. ODONTOSCHISMA MACOUNII (Aust.) Underw. Barrasois 1431a.
27. CALYPOGEIA FISSA (L.) Raddi. Barrasois 1482.
28. CALYPOGEIA NEESIANA (Massal. & Carest.) K. Müll. Barrasois 89, 1449a.
29. CALYPOGEIA SUECICA (Arn. & Perss.) K. Müll. Ingonish 711.
30. LEPIDOZIA SETACEA (Web.) Mitt. Barrasois 1211; Barrasois barrens 472.
31. PTILIDIUM PULCHERRIMUM (Web.) Hampe.‡ Barrasois 1909; also Big Intervale (Macoun, as *P. ciliare*), North Sydney (Howe & Lang).
32. TRICHOOLEA TOMENTELLA (Ehrh.) Dumort.‡ Barrasois 1909, 639; Aspy Bay mountains 1015.
33. SCAPANIA DENTATA Dumort. Barrasois 1397, 1409, 1444.
34. SCAPANIA OAKESII Aust. Barrasois 294.
35. SCAPANIA PALUDICOLA Loeske & K. Müll. Barrasois 213.
36. SCAPANIA SUBALPINA (Nees) Dumort. Barrasois 1909, 1370, 1405.
37. SCAPANIA UMBROSA (Schrad.) Dumort. Barrasois 1909, 634; Ingonish barrens 833 b.
38. LEJEUNEA CAVIFOLIA (Ehrh.) Lindb.‡ Barrasois 1909, 273, 640, 1136, 1273, 1319, 1346, 1349, 1354, 1472. Mount Smoky 739.
39. ANTHOCEROS PUNCTATUS L.† Barrasois 1909.

MOSSES

40. SPHAGNUM CAPILLACEUM (Weiss) Schrank.† *S. acutifolium* Ehrh. Barrasois 200, 1234; Ingonish barrens 834. The Cape Breton specimens belong to

var. *tenellum* (Schimp.) A. L. Andrews, which is also recorded by Macoun from Nova Scotia (as *S. tenellum rubellum*).

41. SPHAGNUM CUSPIDATUM Ehrh. Barrasois barrens 511; Ingonish barrens 1676; Aspy Bay barrens 1000.

Var. TORREYI (Sull.) Braithw. Barrasois 1227, 1164b; Ingonish barrens 835, 836.

42. SPHAGNUM FUSCUM (Schimp.) H. Klinggr. Barrasois 1194, 1235; Barrasois barrens 465, 478, 481; Ingonish barrens 808, 838, 1677; Mount Franey 1703.

43. SPHAGNUM GIRGENSOHNII Russ. Barrasois 0925, 1210; Ingonish barrens 1674; Mount Franey 1701.

44. SPHAGNUM MAGELLANICUM Brid. Barrasois 1165, 1196; Barrasois barrens 476; Aspy Bay barrens 999.

45. SPHAGNUM PAPILLOSUM Lindb.† Barrasois 206, 1166, 1197; Barrasois barrens 477; Ingonish barrens 807, 1668, 1669, 1672, 1675.

46. SPHAGNUM PLUMULOSUM Röhl var. FLAVICOMANS (Card.) A. L. Andrews. Barrasois barrens 480.

47. SPHAGNUM PULCHRUM (Lindb.) Warnst. Barrasois 203; Ingonish barrens 837, 1671, 1673.

48. SPHAGNUM QUINQUEFARIUM (Lindb.) Warnst. Barrasois 0918, 1498, 1499.

49. SPHAGNUM RECURVUM Beauv.† (the Nova Scotia plants are referred to var. *amblyphyllum*). Barrasois 0920, 1233.

50. SPHAGNUM ROBUSTUM (Russ.) Röhl. Barrasois 0919.

51. SPHAGNUM SQUARROSUM Crome. Barrasois 0923, 0926.

52. SPHAGNUM SUBSECUNDUM Nees.† *S. rufescens* Limpr. Barrasois 207, 1433; Mount Franey 1702.

53. SPHAGNUM TENELLUM Pers. Ingonish barrens 1670, 1678.

54. SPHAGNUM TENERUM Sull. & Lesq. Barrasois 1167; Barrasois barrens 482; Ingonish barrens 1667.

55. SPHAGNUM TERES (Schimp.) Aongstr. Barrasois 1164.

56. DITRICHUM PUSILLUM (Hedw.) Timm.† *D. tortile* (Schrad.) Lindb. Barrasois 09157, 627.

57. DICRANELLA VARIA (Hedw.) Schimp.† Barrasois 09154.

58. ONCOPHORUS POLYCARPUS (Hedw.) Brid. Barrasois 1461, 1462.

59. DICRANUM BONJEANII DeNot.† *D. subpalustre* C. Müll. & Kindb. Barrasois 190, 191; Indian Brook barrens 459; Ingonish barrens 1650.

60. DICRANUM CONDENSATUM Hedw.† Ingonish barrens 818.

61. DICRANUM DRUMMONDII C. Müll. Barrasois 196, 1344.

62. DICRANUM MONTANUM Hedw.† Barrasois 09156, 197.

63. DICRANUM MUHLENBECKII Br. & Sch. Ingonish barrens 811.

64. WEISIA VIRIDULA (L.) Hedw. Barrasois 09159.

65. HYMENOSTYLUM CURVIROSTRE (Ehrh.) Lindb. Cape Dauphin 595.

66. ENCALYPTA CILIATA (Hedw.) Hoffm. Barrasois 1470.

67. GRIMMIA CONFERTA Funck.† Barrasois 0979.

68. *RACOMITRIUM SUDETICUM* (Funck) Br. & Sch.† Ingonish barrens 1663b.
69. *ULOTA AMERICANA* (Beauv.) Limpr.† Barrasois 1345, 1574, 1577.
70. *TETRAPLODON ANGUSTATUS* (Sw.) Br. & Sch. Ingonish barrens 827, 1632, 1640, 1680.
71. *TETRAPLODON BRYOIDES* (Zoeg.) Lindb. Barrasois barrens 493; Ingonish barrens 824, 1679, 1681.
72. *POHLIA NUTANS* (Schreb.) Lindb.† Barrasois 09131, 09139, 1347; Mount Franey 1705.
73. *BRYUM BIMUM* Schreb.† Aspy Bay 1044.
74. *BRYUM CAPILLARE* L.† Barrasois 09136 (var. *flaccidum* Br. & Sch.); Aspy Bay 1026.
75. *BRYUM CYCLOPHYLLUM* Br. & Sch. Barrasois 1304.
76. *BRYUM DUVALII* Voit.† Barrasois 389.
77. *MNIUM CINCLIDIODES* Hüben. Barrasois 1172; Ingonish 717.
78. *MNIUM CUSPIDATUM* (L.) Leyss.† Barrasois 0954, 1389; Ingonish 708.
79. *MNIUM MARGINATUM* (Dicks.) Beauv. Barrasois 638.
80. *MNIUM MEDIUM* Br. & Sch. Barrasois 0956; Ingonish 705.
81. *MNIUM ORTHORRHYNCHUM* Br. & Sch.† Ingonish 710.
82. *MNIUM SPINULOSUM* Br. & Sch.† Barrasois 0958; 1294, 1337.
83. *AULACOMNIUM ANDROGYNUM* (L.) Schwaegr.† Barrasois 0937, 1237 1350.
84. *BARTRAMIA POMIFORMIS* (L.) Hedw.† Barrasois 0992, 1348; Mount Franey 1706.
85. *PHILONOTIS MARCHICA* (Willd.) Brid. Aspy Bay mountains 1004.
86. *FONTINALIS ANTIPYRETICA* L.† Barrasois 1207; Ingonish 682, 723.
87. *FONTINALIS BIFORMIS* Sull. Barrasois 214.
88. *FONTINALIS CARDOTI* Ren. Barrasois 1481.
89. *FONTINALIS FLACCIDA* Ren. & Card. Mount Smoky 728b.
90. *FONTINALIS LESCURI* Sull. Ingonish 700.
91. *FONTINALIS NOVAE-ANGLIAE* Sull.† Barrasois 416.
92. *FONTINALIS SULLIVANTII* Lindb. Aspy Bay mountains 1012.
93. *DICHELYMA CAPILLACEUM* (L.) Schimp. Barrasois 1171.
94. *LEUCODON SCIUROIDES* (L.) Schwaegr. Barrasois 0994, 1332; Ingonish 917.
95. *PYLAISIA INTRICATA* (Hedw.) Ren. & Card. (*P. velutina* Schimp.). Barrasois 1484, 1537.
96. *PTERGYNANDRUM FILIFORME* (Timm) Hedw. Barrasois 394, 631, 1291, 1375, 1402, 1403.
97. *HETEROCLADIUM SQUARROSULUM* (Voit) Lindb. Barrasois 0950, 0964, 0965, 1105, 1400, 1460, 1540; Mount Smoky 735; Ingonish 707; Aspy Bay 1048.
98. *MYURELLA JULACEA* (Vill.) Br. & Sch. Cape Dauphin 599.
99. *ANOMODON ROSTRATUS* (Hedw.) Schimp.† Ingonish 706.
100. *LESKEELLA NERVOSA* (Schwaegr.) Loeske. Barrasois 0966, 385.
101. *THUIDIUM ABIETINUM* (L.) Br. & Sch.† Barrasois 0963.

102. THUIDIUM DELICATULUM (L.) Br. & Sch.† Barrasois 0962, 93, 315, 1396.
103. THUIDIUM RECOGNITUM (Hedw.) Lindb.† Barrasois 0961.
104. ELODIUM BLANDOWII (Web. f. & Mohr) Broth.† *Thuidium Blandowii* Br. & Sch. Aspy Bay 972.
105. AMBLYSTEGIUM RIPARIUM (L.) Br. & Sch. Ingonish 683, 884.
106. AMBLYSTEGIUM VACILLANS Sull. Ingonish 888.
107. AMBLYSTEGIELLA CONFEROIDES (Brid.) Loeske. Cape Dauphin 594.
108. AMBLYSTEGIELLA SPRUCEI (Bruch) Loeske. Ingonish 1714.
109. AMBLYSTEGIELLA SUBTILIS (Hedw.) Loeske. Barrasois 091.
110. HYGROAMBLYSTEGIUM FILICINUM (L.) Loeske.† *Hypnum filicinum* L. Aspy Bay 969.
111. DREPANOCLADUS ADUNCUS (L.) Warnst.† *Hypnum uncinatum* Hedw. Barrasois 099, 0928, 1134, 1146; 09122 (var. *plumosus* [Schimp.] Warnst.); 09126 (var. *gracilescens* [Br. & Sch.] Warnst.); 09127 (var. *gracillimus* [Berg.] Warnst.); 1200 (var. *alpinus* [Ren.] Warnst.); Ingonish 712.
112. DREPANOCLADUS EXANNULATUS (Gümb.) Warnst.† *Hypnum exannulatum* Gümb. Barrasois 88, 201, 215; Ingonish mountains 795, 798a, 996.
113. DREPANOCLADUS FLUITANS (L.) Warnst.† *Hypnum fluitans* L. Barrasois 0913, 503, 570, 1231, 1232. Ingonish 883.
114. DREPANOCLADUS PURPURASCENS (Schimp.) Loeske. Ingonish mountains 1659.
115. DREPANOCLADUS REVOLVENS (Sw.) Warnst. Ingonish mountains 794, 798b.
116. DREPANOCLADUS SCORPIOIDES (L.) Warnst. Ingonish mountains 792, 803; Aspy Bay 963; Aspy Bay barrens 1013.
117. DREPANOCLADUS SERRATUS (Milde) Warnst. Barrasois 0911, 0912.
118. DREPANOCLADUS SUBMERSUS (Schimp.) Warnst. Ingonish barrens 822.
119. HYGROHYPNUM ALPESTRE (Sw.) Broth. Barrasois 1496.
120. HYGROHYPNUM DILATATUM (Wils.) Loeske. Barrasois 09162, 09163; Cape Dauphin 601.
121. HYGROHYPNUM PALUSTRE (Huds.) Loeske. Barrasois 1133.
122. HYGROHYPNUM SMITHII (Sw.) Broth. (*Hypnum arcticum* Sommerf.). Barrasois 1448.
123. CHRYSOHYPNUM CHRYSOPHYLLUM (Brid.) Loeske.† *Hypnum chrysophyllum* Brid. Barrasois 09175; Aspy Bay 973.
124. CHRYSOHYPNUM HISPIDULUM (Brid.) G. Roth.† *Hypnum hispidulum* Brid. Barrasois 09108.
125. CHRYSOHYPNUM POLYGAMUM (Br. & Sch.) Loeske. Barrasois 540.
126. CHRYSOHYPNUM STELLATUM (Schreb.) Loeske. Barrasois 672; Ingonish mountains 797; Aspy Bay 1045.
127. RHYTIDIADELPHUS TRIQUETRUS (L.) Warnst.† *Hylocomium triquetrum* Br. & Sch. Barrasois 0951, 94, 1202, 1485.
128. HYLOCOMIUM SPLENDENS (Hedw.) Br. & Sch.† Barrasois 0987a.

129. HYPNUM SCHREBERI Willd.† Barrasois 0989a, 0989b, 0989c.
130. PTILIUM CRISTA-CASTRENSIS (L.) DeNot.† *Hypnum Crista-Castrensis* L. Barrasois 09118, 09177.
131. STERODON CALLICHOUS Brid.† *Hypnum callichroum* Brid. Ingonish mountains 1664.
132. STERODON CUPRESSIFORMIS (L.) Lindb.† *Hypnum cupressiformis* L. Barrasois 097, 09125, 1332, 1473.
133. STERODON LINDBERGHII (Mitt.) Warnst. Barrasois 0910, 0929, 199; Ingonish mountains 870b, Aspy Bay 962.
134. STERODON PALLESCENS (Hedw.) Lindb. Barrasois 09113a, 09113b 09114.
135. STERODON PRATENSIS (Koch) Warnst. Barrasois 0930; Ingonish 13.
136. STERODON REPTILIS (Michx.) Mitt.† *Hypnum reptilis* Michx. Barrasois 09117, 09176, 09178, 09179, 312, 630.
137. HETEROPHYLLON HALDANIANUM (Grev.) Kindb.† *Hypnum Haldanianum* Grev. Barrasois 09107, 1391, 1429.
138. ISOPTERYGIUM ELEGANS (Hook.) Lindb.† *Plagiothecium elegans* Schimp. Barrasois 1339.
139. ISOPTERYGIUM MUELLERIANUM (Schimp.) Lindb. Barrasois 09172, 1308.
140. ISOPTERYGIUM PULCHELLUM (Dicks.) Jaeg. Barrasois 1336.
141. ISOPTERYGIUM TURFACEUM (Lindb.) Lindb.† *Plagiothecium turfaceum* Lindb. Barrasois 09170, 1290, 1314; Ingonish 1716.
142. PLAGIOTHECIUM SYLVATICUM (Huds.) Br. & Sch. Barrasois 09167.
143. SEMATOPHYLLUM RECURVANS (Michx.) E. G. Britton. Barrasois 09180, 09181, 265, 1311.
144. SEMATOPHYLLUM TENUIROSTRIS (Br. & Sch.) E. G. Britton. Barrasois 266.
145. CAMPTOTHECIUM NITENS (Schreb.) Schimp. Barrasois 1208.
146. BRACHYTUECIUM ALBICANS (Neck.) Br. & Sch. Barrasois 1486.
147. BRACHYTUECIUM FLEXICAULE Ren. & Card. Barrasois 1542.
148. BRACHYTUECIUM NOVAE-ANGLIAE (Sull. & Lesq.) Jaeg. & Sauerb. Barrasois 09100.
149. BRACHYTUECIUM RUTABULUM (L.) Br. & Sch.† Barrasois 09104.
150. BRACHYTUECIUM STARKEI (Brid.) Br. & Sch. Barrasois 0999.
151. OXYRRHYNCHIUM PRAELONGUM (Hedw.) Warnst. Barrasois 09173.
152. OXYRRHYNCHIUM RUSCIFORME (Neck.) Warnst. var. *complanatum* H. Schultze. Barrasois 1539, 1560.
153. EURYNCHIUM STRIGOSUM (Hoffm.) Br. & Sch.† Barrasois 09102.
154. CLIMACIUM DENDROIDES (L.) Web. f. & Mohr. Barrasois 0990, 1297, 1541.
155. BUXBAUMIA INDUSIATA Brid. Barrasois 1.
156. CATHARINAEA ANGUSTATA Brid. Barrasois 0948; Aspy Bay 1022.
157. CATHARINAEA UNDULATA (L.) Web. f. & Mohr.† *Atrichum undulatum* Beauv. Barrasois 0947; Aspy Bay 1023.

158. *POLYTRICHUM COMMUNE* L.† Barrasois 0938, 131, 502, 514, 568; Aspy Bay mountains 1001.

159. *POLYTRICHUM GRACILE* Dicks. Aspy Bay barrens 1002 (var. *anomalum* Milde).

160. *POLYTRICHUM JUNIPERINUM* Willd.† Barrasois 0939, 188.

161. *POLYTRICHUM STRICTUM* Banks.† Barrasois 0944, 0945.

4. ADDITIONAL SPECIES RECORDED FROM NOVA SCOTIA

The following list includes species which have been reported from Nova Scotia but have not been collected in Cape Breton. Except where otherwise indicated the records are to be found in Macoun's catalogue. LIVERWORTS: *Riccardia palmata*, *Nardia Geoscyphus* (DeNot.) Lindb.‡, *Jamesoniella heterostipa* Evans‡, *Lophozia lycopodioides*, *Cephalozia connivens* (Dicks.) Lindb.‡, *Cephaloziella divaricata* [?] (as *Cephalozia*), *C. elachista* (Jack) Schiffn.‡, *Scapania apiculata* Spruce‡, *S. Bolanderi* [?], *S. irrigua* (Nees) Dumort.‡, *Microlejeunea ulicina* (Tayl.) Evans‡. MOSSES: *Sphagnum imbricatum affine*, *S. tabulare* (as *S. molle*), *Andreaea alpestris*, *Dicranum consobrinum* [?], *Fissidens minutulus*, *Tortula mucronifolia* (as *Barbula*), *Racomitrium affine*, *R. Nevii*, *R. robustifolium*, *Orthotrichum speciosum*, *O. strangulatum*, *Ulota crispula*, *Pohlia annotina* (as *Webera*), *P. proliger*‡, *P. pseudo-carneum* (as *Webera*), *P. pulchella* (as *Webera* *Lescuriana*), *P. sphagnicola* (as *Webera*), *Mniobryum albicans* (as *Webera*), *M. carneum* (as *Webera*), *Bryum argenteum*, *B. caespitium*, *B. erythrophyllum*, *B. inclinatum*, *B. intermedium*, *B. Knowltoni*, *B. Raui*, *B. torquescens*, *Mnium pseudo-lycopodioides*, *Cinclidium stygium*, *C. subrotundum*, *Meesia trichodes* (as *M. uliginosa*), *Leucodon brachypus*, *Homalia Macounii*, *Amblystegium orthocladon*, *Ctenidium molluscum* (as *Hypnum*), *Rhytidiadelphus calvescens* (as *Hylocomium*), *Stereodon canadensis* (as *Hypnum*), *S. fastigiatus* (as *Hypnum*), *S. Jamesii* (Sull.) Broth.‡, *Isopterygium deplanatum* (as *Rhynchostegium*), *Plagiothecium Roeseanum* (as *P. Sullivantiae*), *Polytrichum piliiferum*.¹

5. SUMMARY

In the present paper, 349 bryophytes are recorded as having been collected in Cape Breton.² Of this number, 93 species are liverworts, 256 are mosses. Of the total number, 170 species (51 liverworts, 119 mosses) have been recorded from Nova Scotia also, while 179 species (41 liverworts, 138 mosses) are accredited only to Cape Breton. On the other hand, 50 of the species listed from Nova Scotia (9 liverworts, 41 mosses) have yet to be recorded from Cape Breton. Considering the province of Nova Scotia as a whole, its bryophyte flora, as summed up in the present paper, includes 399 species: 102 liverworts and 297 mosses.

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¹ Common in Cape Breton also, but no specimens preserved.

² The figures here given do not include species queried [?] in the preceding lists. For various reasons it seems not unlikely that a few others of the mosses listed by Macoun should also be excluded.